

Remarks/Arguments:

Reconsideration of the application is requested.

Claims 1-27 remain in the application. Claim 1 has been amended.

In item 3 on page 2 of the above-identified Office action, claims 1-6, 8, 12-14, and 21-23 have been rejected as being obvious Ota et al. (U.S. Patent No. 5,486,338) (hereinafter "Ota") in view of Cheung (U.S. Patent No. 4,193,793) and Maus et al. (U.S. Patent No. 5,916,530) (hereinafter "Maus") under 35 U.S.C. § 103.

The rejection has been noted and the claims have been amended in an effort to even more clearly define the invention of the instant application. The claims are patentable for the reasons set forth below. Support for the changes is found on page 5, lines 11-14 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, *inter alia*:

the contraction limiter having a thermal expansion behavior being displaced in terms of time or in relation to temperature, and a surface-specific heat capacity between a surface-specific heat capacity of the matrix and the housing, such that the contraction limiter begins to deform only in a higher temperature range in comparison with the matrix and begins to deform in a lower temperature range in comparison with the housing.

It is noted that the corporate assignee of the Maus reference is also the assignee of the instant application. Therefore, applicants are very familiar with the Maus reference.

It is noted that the Maus reference does not make up for the deficiencies Ota and Cheung or Cyron and Cheung with respect to the arguments pertaining to an outwardly directed tensile stress. Accordingly, those arguments are still valid and are incorporated herein by reference in their entirety.

Furthermore, the Examiner correctly stated that Ota discloses a structure wherein the matrix, the contraction limiter and the housing all contain the same specific heat capacity.

As previously discussed, Cheung discloses a converter placed within a casing without any spacers or contraction limiters or other elements provided between the casing and the converter. The converter has a relatively low heat capacity.

The Maus reference discloses a casing that has a high heat capacity. The casing thereby serves as heat storage when the honeycomb body is no longer heated by exhaust gas. The connecting tube disclosed by Maus is constructed as a thermal bridge which conducts heat between the casing and the honeycomb body. Maus does not disclose any information regarding the deformation of the connecting tube.

The inventions of Cheung and Maus are both directed to the catalytic performance of catalysts. In the case of Cheung, Cheung discloses that the converter should reach the operating temperature within a very short time due to the low heat capacity which is related to the volume of the converter. Maus discloses to provide a heat storing casing that keeps the operating temperature of the honeycomb body at a high value even after the temperature of the exhaust gas has fallen below the critical value for catalytic processes.

None of Cheung, Maus and Ota pertain to the mechanical structure of a honeycomb body with a casing and a contraction limiter that should prevent the honeycomb body from deforming in the end areas to a smaller initial diameter due to a barreling effect. None of the references discloses any

information regarding the feature of the present invention that a different thermal expansion behavior and different surface specific heat capacities of the components matrix, the contraction limiter, and the housing are chosen in that way that the contraction limiter begins to deform only in a higher temperature range in comparison with the matrix and begins to deform in a lower temperature range in comparison with the housing.

Moreover, the feature of different thermal expansion behaviors of the components serves to further clarify the completely different technical aspect which is the basis of the present invention. Both parameters (thermal expansion behavior and surface specific heat capacity) primarily depend on material specifications and not on constructional specifications as featured in Ota (thin foil, thicker cushion member and even thicker casing: column 3, line 25). Especially, the limitation of "thermal expansion behavior" is directly related to the aspect of the present invention that the contraction limiter is supposed to expand later or slower or only at higher temperatures than the matrix thereby causing a tensile force to act on the honeycomb structure. As is easily seen from its specification, the parameter "surface specific heat capacity" does not by itself cause an element to induce a tensile force

on the honeycomb structure, since it is only the measure of energy required to increase the temperature of an object. Only in combination with adequately chosen thermal expansion behavior is the material qualified to be used for the contraction limiter of the present invention. This is simply not disclosed by any of the cited references.

Furthermore, none of the references relates to the problem of a "barreling effect" on a matrix or that contraction limiters are constructed to induce the tensile force into the matrix. All the references are directed to elements that are constructed to compensate the different radial movements of casings and matrixes, so that no forces are applied to the matrix.

It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest all the claim limitations.

As seen from the above-given remarks, the references do not show or suggest the contraction limiter having a thermal expansion behavior being displaced in terms of time or in relation to temperature, and a surface-specific heat capacity between a surface-specific heat capacity of the matrix and the

housing, such that the contraction limiter begins to deform only in a higher temperature range in comparison with the matrix and begins to deform in a lower temperature range in comparison with the housing, as recited in claim 1 of the instant application.

The references applied by the Examiner do not teach or suggest all the claim limitations. Therefore, it is believed that the Examiner has not produced a *prima facie* case of obviousness.

Since claim 1 is allowable over Ota in view of Cheung and Maus, dependent claims 2-6, 8, 12-14, and 21-23 are allowable over Ota in view of Cheung and Maus as well.

In item 4 on page 6 of the Office action, claims 1-20 and 24-27 have been rejected as being obvious over Cyron (U.S. Patent No. 4,795,615) in view of Cheung (U.S. Patent No. 4,193,793) under 35 U.S.C. § 103.

Although not listed in the rejection, it appears that the Examiner also uses the Maus reference in this rejection.

Both Ota and Cyron disclose structures where the matrix, the contraction limiter, and the housing all have the same heat capacity.

As noted above, the Maus reference discloses a casing that has a high heat capacity. The casing thereby serves as heat storage when the honeycomb body is no longer heated by exhaust gas. The connecting tube disclosed by Maus is constructed as a thermal bridge which conducts heat between the casing and the honeycomb body. Maus does not disclose any information regarding the deformation of the connecting tube.

It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest all the claim limitations.

As seen from the above-given remarks, the references do not show or suggest the contraction limiter having a thermal expansion behavior being displaced in terms of time or in relation to temperature, and a surface-specific heat capacity between a surface-specific heat capacity of the matrix and the housing, such that the contraction limiter begins to deform only in a higher temperature range in comparison with the matrix and begins to deform in a lower temperature range in

comparison with the housing, as recited in claim 1 of the instant application.

The references applied by the Examiner do not teach or suggest all the claim limitations. Therefore, there is no *prima facie* case of obviousness.

Since claim 1 is allowable over Cyron in view of Ota and Maus, dependent claims 2-20 and 24-27 are allowable over Cyron in view of Ota and Maus as well.

Moreover, the following further remarks pertain the Examiner's allegation on pages 4 and 9 of the Office action that "regarding limitations recited in claim 1 which are directed to a manner of operating the disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim."

It is again respectfully noted that the Examiner's allegation is entirely misplaced. The Examiner is respectfully reminded that intended use requires reciting a manner in which the system is operated or reciting an article worked upon. The claim language in claim 1 of the instant application does neither. The arguments pertaining to the "the manner of

operation" from the previous response are incorporated herewith in their entirety.

Furthermore, the material characteristics, as required in claim 1 of the instant application are akin to a limitation requiring that a material of an article be electrically conductive or electrically insulating. Of course, such a material will only conduct or insulate with respect to electricity when electricity is applied to it. However, the material itself is electrically conductive or electrically insulating whether or not electricity is applied to the material because such a material limitation is a structural limitation. Accordingly, a limitation which defines material characteristics of an element is not considered an intended use. Furthermore, there are a multitude of issued U.S. Patents which recite such structural limitations for given materials in device claims. Accordingly, the claim does not require that the device be operated, only that it has the structural properties to respond in a specific way if and when it is operated. Furthermore, the claims do not recite that the honeycomb body works on a material or article. Therefore, it is respectfully noted that the Examiner's allegation with respect to limitations regarding manner of operating the disclosed system, are misplaced.

In item 7 on page 14 of the Office action the Examiner alleges that "Applicant appears to contradict his argument in this sentence. The 'degree' of expansion/contraction is indeed dependent on the temperature variation. As such, this degree will be different depending on the operating temperature variation, regardless of the material properties."

It is respectfully noted that the Examiner's allegation is in error. Particularly, applicant does not in any way contradict the argument. Applicant explicitly stated that the material properties which provide for degree of thermal expansion/contraction are always present in the structural elements. Moreover, the the material properties are precisely what governs the amount of tensile stress in the matrix. Therefore, therefore it follows that the degree of expansion/contraction is explicitly based on the material properties. Therefore, it is respectfully noted that the Examiner's allegation with respect to applicant's arguments, are not accurate.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is,

therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-10 and 12-27 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel respectfully requests a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

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Please charge any other fees which might be due with respect
to Sections 1.16 and 1.17 to the Deposit Account of Lerner
Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,

/Alfred K. Dassler/

Alfred K. Dassler
Reg. No.: 52,794

AKD:sa

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Lerner Greenberg Stemer LLP
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101